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THE EXPLOITED FIELDS OF THE BAKU REGION.

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THE EXPLOITED FIELDS OF THE BAKU REGION.I. INTRODUCTION.

According to the official Soviet statistics the total crude production of the U.S.S.R. increased by 13% in 1950, as against 1949, and was 21 per cent superior to that of 1940

In order to obtain the exact figure of this production the analysis of the producing situation of the Soviet petroleum industry during the post-war reconstruction period of 1946-1950 has to be examined. Such an analysis can be found in the following table, in which the Soviet annual percentage increases are interpreted by means of exact production figures, based on the 1945 crude production total,

CRUDE OIL PRODUCTION OF THE U.S.S.R.

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<u>Year.</u>	<u>Increase in comparison with the preceding year (in %).</u>	<u>Metric Tons.</u>
1945	-	20,500,000
1946 vs 1945	+ 12.0 %	22,960,000
1947 vs 1946	+ 19.0 %	27,322,400
1948 vs 1947	+ 13.0 %	30,874,300
1949 vs 1948	+ 14.3 %	35,289,200
1950 vs 1949	+ 13.0 %	39,876,570

The total crude production of the Soviet Union reached 32,601,000 tons in 1940; if it has been exceeded, in round figures, by 21 per cent in 1950, the total production would equal 39,447,200 tons in 1950. The discrepancy between the two totals obtained by different methods could be explained by the indication of percentages of the production's increase in round figures. In other words, the actual production figure for 1950 should be of an order of 39,660,000 tons.

It has to be emphasized, that the Soviets, far from exaggerating the recent development of their petroleum industry, are more inclined now to conceal its exact level, in making believe, that their crude production is less important, than this is the case in reality, hence, sometimes, contradictory official statements. Thus, for instance, the figure of 31,000,000 (a round figure again) was mentioned as that of

the total crude production in 1940, while already in 1939 the Soviet oil industry produced 31,059,500 tons, and the crude production increased by 1,541,700 tons, or 4.96 %, in 1940, in comparison with 1939.

Some of the European economists hastily concluded that the total crude production of the Soviet Union was only of about 37,600,000 tons in 1950, presuming that it did not exceed 31,000,000 tons in 1940.

Furthermore, it has also to be mentioned, that a number of Soviet oil producing organizations, such as, for example, The Bashneft (Urals); The Kuibyshevneft and The Saratovneft (Volga); The Turkmenneft; The Grozneft and The Krasnodarneft, have achieved their plan quotas for 1950, either late in 1948 or during 1949. Therefore, revised (increased) production targets were set for these oil producing areas for 1950, which have all been reached by the 10th December 1950. According to the Soviet statements, their petroleum industry has overfulfilled the revised production quotas by the 10th of December 1950, and over 2,200,000 tons of crude were expected to be yielded in excess of the programme before the end of 1950.

If the general production situation of the Soviet oil industry appears to have been quite satisfactory in 1950, this was mainly due to a further development of the Eastern oil regions (Urals, Volga, Turkmenia, Middle Asia, etc.), while the yields of the Baku region were only slightly superior to the plan quota (17,000,000 tons), and thus remained still much inferior to their pre-war level.

The above considerations make us to emphasize, once more, the particular importance of the Eastern territories in the development of the Soviet petroleum industry. Indeed in these regions the plan targets for 1950 were, generally, reached already by the end of 1948 or early in 1949, whereas the revised production quotas for 1950 were achieved by the Eastern oil trusts in Autumn 1950.

The situation prevailing in the producing fields of the Baku region will be briefly examined below. As the investigations for petroleum in various exploration areas of the Azneft have already been described in an earlier report (December 1949), no mention about these shall be made in the present one.

In order to have a general picture of the situation existing at the present time in the oil fields of the Azneft, the following facts have to be pointed out.

1. The strategic insecurity of the Apsheron Peninsula oil areas; due to their location near the Turkish and Iranian borders.

2. According to some recent reports, the so-called "atomic" steel bomb-shelters are being built along the entire Apsheron Peninsula, while the construction of concrete shelters was discontinued.

3. Considerable numbers of Azerbaijani population is being transferred to the Soviet Central Asia (figures of an order of 200,000 or even 250,000 persons thus displaced are being given).

Such a general conditions are, of course, far from being favourable for a normal development of crude production in the fields of the Azneft, and it even may be asked, whether the Soviets do really intend to increase much the crude production in the extremely vulnerable Baku region under the present circumstances.

Meanwhile, the problem of transportation of the Baku crude to the Volga refineries has received, as it seems, a partial solution with the completion, after the war, of a new pipe-line, linking the Baku area with Saratov, via Astrakhan. This pipe-line, which has a diameter of 10 " and is about 700 kilometers long, has an approximate annual capacity of 1,600,000 tons of crude or residual fuel oil, which is being used as charging stock in Saratov cracking plants.

II. PRODUCTION & EXPLORATION.

The Azneft was the last among the Soviet petroleum organizations to achieve the plan production quota, by the 10th December 1950. Whereas several other oil producing trusts, such as Bashneft, Kuibyshevneft, Turkmenneft, etc, reached the level of crude production planned for 1950, as early as late in 1948, the development of production in the oil fields of the Baku area followed a much slower rhythm, and the average annual increase was of an order of only 6.1 per cent, as against from 15 to 26 % in the Eastern regions.

[redacted] a number of oil trusts of the Baku region had failed to reach their production targets in 1949, but the producing situation somewhat improved in this general area during 1950, thus that the Azneft union has even slightly overfulfilled its 1950 quota.

In spite of all the efforts of the Soviets technicians, the crude production of the Azneft remained at a much lower level in 1950, if compared with that of 1940, and its relative importance in comparison with the total Soviet production was of an order of 42.9 per cent, as against 70.43 per cent in 1940. The above facts prove the gradual exhaustion of the old exploited fields of the Apsheron Peninsula (Leninneft, Kirovneft, Orjonikidzeneft, etc.), and the slow development of new oil producing areas. The prolific new oil fields, such as Azizbekovneft (Kala); Molotovneft (Puti & Lok-Batan), and Buzovnyneft (Buzovny & Mashtagi), etc., cannot compensate the continuous decline of the old fields, hence the very slow increase of the Azneft's production during the reconstruction period of 1946-1950, while the yields of the Eastern oil regions in some cases increased five times since 1940.

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Drilling in the Sea.

Further development of exploitation drilling off the coast of the Apsheron Peninsula, and namely in the vicinity of the Artema Island and Bibi-Eibat oil field [redacted]

[redacted] has to be especially emphasized. A special oil trust has been created in 1950 under the name of The Asmorneft (Azerbaijan Sea Oil) for the purpose of exploiting the crude oil reserves lying under the Caspian Sea bottom.

Modern Technical Equipment.

Modernization of various technical equipment was continued in the fields of the Azneft in 1950. The specialized works of the Azneftmash trust (Azneft machinery), including "Lieutenant Schmidt" plant, Budienny oil machinery works, etc., manufacture now on a large scale: metal derricks; pumping-jacks; deep pumps; self propelled installations for underground repairs, floating cranes for undersea oil wells and improved high speed drill-bits, as well as self-propelled drilling and cementing units, etc.*). The output of different oil field *). See page 5.

equipment continued to increase; thus, for instance, that of pumping-jacks increased 28 times in 1950, as against 1949, while the manufacturing of automatic drills rose by 84 per cent last year.

Considerable efforts are being made by the Soviets in order to supply the petroleum industry with modern equipment, and thus to obtain a radical improvement in the Azneft's producing situation. Much attention is being, generally, paid to a further extension of deep pumping production method.

Turbine drilling is also being developed in the oil fields of the Azneft. Owing to the turbine drilling method, directional drilling from the firm ground under the sea was rendered easier, and the exploitation of oil reserves lying under Caspian could be intensified.

In addition, considerable number of temporarily shut in wells had been brought back into production in various oil fields of the Azneft, and these yield now up to five tons per day and per well.

In spite of all these measures, the production situation remained less satisfactory in the Baku area, than in the Eastern oil regions. Most part of the old oil fields are being gradually exhausted, and their yields continue to decline. No new discoveries of any importance were reported from Azerbaijan in 1950, and the development of crude production in new oil fields was barely sufficient to compensate its decline in the old ones, and thus to maintain a moderate increase of the total production of The Azneft.

The experience of the last five years proved, that, unless some prolific new oilbearing areas were discovered in Azerbaijan (either within the limits of the Apsheron Peninsula, or outside them), no substantial increase of the Azneft's production could take place, at least in the immediate future.

We shall examine successively the development of crude production in various oil fields of the Baku region as follows:

A. Central and Eastern Fields of The Azneft.

1. Balakhany-Sabunchi-Ramany (The Leninneft).

The industrial exploitation of these oil fields started

*) Some of the oil machinery manufacturing works have reached their production targets for 1950 already in 1948.

in 1873, but a small crude production by rudimentary methods had been obtained in this area since 1821. The main production is being yielded by the Middle Pliocene deposits ("Productive Series"), which reach here a general thickness of 1,300 meters. Some production had been formerly also obtained from Upper Pliocene formations (Apscheronian and Akchagyl Series), now practically exhausted.

The Productive Series comprises three sections: the upper section is in turn subdivided into ten oilbearing horizons; the middle section is oilbearing only in the Western part of the Balakhany area, along the narrow band following the prestal part of the anticline, whereas in other parts of these fields it is represented by waterbearing sands. In the lower section of Productive Series, thirteen oilbearing layers are encountered in the Upper Kirmakinsky stage, nine - in Kirmakinsky, and three - in the Lower Kirmakinsky.

Among the oil producing horizons of the Productive Series, the most prolific are as follows: - Horizons, III, IV, V, and VI of the upper section, two layers of the Kirmakinsky stage, and the upper layer of the Lower Kirmakinsky horizon.

Different types of crude are being obtained in Lenin fields; their specifications can be found in the Chapter IV. of the present report.

The development of the crude production in the Balakhany, Sabunchi and Ramany fields is shown in the following table.

Crude Oil Production of The Leninneft.

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1821/62	- 129,100	1873	- 79,700
1863	- 5,000	1874	- 102,600
1864	- 8,700	1875	- 180,200
1865	- 8,900	1876	- 245,700
1866	- 11,200	1877	- 327,600
1867	- 16,100	1878	- 393,100
1868	- 11,900	1879	- 342,100
1869	- 27,200	1880	- 655,200
1870	- 22,200	1881	- 787,100
1871	- 24,800	1882	- 931,000
1872	- 64,300	1883	- 1,378,600

(Continued from page 6.)

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1884	- 1,780,000	1913	- 4,814,600
1885	- 1,753,100	1914	- 4,356,100
1886	- 2,138,100	1915	- 4,381,900
1887	- 2,725,800	1916	- 3,927,500
1888	- 2,950,000	1917	- 3,306,000
1889	- 3,421,800	1918	- 1,650,000
1890	- 4,106,300	1919	- 2,036,500
1891	- 4,139,600	1920	- 1,372,000
1892	- 4,597,600	1920/21	- 970,700
1893	- 4,253,600	1921/22	- 1,310,000
1894	- 5,483,300	1922/23	- 1,807,600
1895	- 5,282,600	1923/24	- 2,249,800
1896	- 5,910,700	1924/25	- 2,438,700
1897	- 6,427,900	1925/26	- 2,582,900
1898	- 7,200,400	1926/27	- 2,834,100
1899	- 8,034,300	1927/28	- 2,816,100
1900	- 8,723,100	1928/29	- 3,112,200
1901	- 8,345,600	1929/30	- 3,492,900
1902	- 7,065,900	1930	- 968,500
1903	- 7,166,500	1931	- 4,061,600
1904	- 7,065,000	1932	- 3,669,000
1905	- 4,608,100	1933	- 3,213,700
1906	- 5,238,300	1934	- 3,680,900
1907	- 5,611,300	1935	- 4,279,900
1908	- 5,624,900	1936	- 4,534,000
1909	- 5,954,600	1937	- 4,230,000
1910	- 5,840,500	1938	- 4,391,000
1911	- 5,240,000	1939	- 4,436,700
1912	- 5,107,600	1940	- 4,367,600
		1950	- 2,200,000 *).

From the beginning of the Russian oil industry and up to December 31st 1940 the Lenin fields yielded a cumulative total of 229,116,100 tons. The crude production of these fields during the period of 1941-1950 can be estimated at about 25,000,000 tons. Thus, the total cumulative production of this group of fields, as of January 1st, 1951, can be estimated at about 254,000,000 tons.

*). Our best estimates.

Exploration.

Since 1935 deep test drilling had been carried out by The Leninneft in order to extend the productive area of the Lower Kirmakinsky horizon (Middle Pliocene Series) both to the East and to the South-West of the previously exploited area, as all the horizons of the Upper Productive Series were completely drilled, so that production from these horizons came almost exclusively from old wells, each of which yielded only a few tons per day. Although relatively higher yields were obtained from the Upper Kirmakinsky and Kirmakinsky horizons of the Productive Series, these horizons also showed signs of exhaustion. The main producer was the Lower Kirmakinsky horizon, which still gives quite good yields.

Test drilling was carried out to all the horizons of the Lower Productive Series on extensions of the North-Western and South-Western flanks of the structure. The results of this test ~~were~~ drilling were on the whole encouraging, particularly in the section between Sabunchi and Kamany on both flanks, whereas only negative results were obtained to the South of Balakhany. During 1936 test drilling to the Lower Kirmakinsky horizon was continued especially in the Eastern part of the field, in the vicinity of the Kamany village. Several wells with high initial yields were brought in (well No. 97 - initial daily yield 1,000 tons, No. 131 - 250 tons, No. 132 - 300 tons). The settled production of the wells exploiting the Lower Kirmakinsky horizon in the Eastern part of the field varied between 80 and 200 tons per day.

These favourable results were, however, more than counteracted by the decline of production of the wells exploiting the Upper Kirmakinsky horizon and Kirmakinsky horizon.

The extension of the productive area of the Lenin fields in an Eastern and South-Eastern direction in the vicinity of the Kamany village and even beyond it resulted in a considerable increase of their production in 1937. Among the test wells which permitted the extension of the oil area of the Lower Kirmakinsky horizon in the Eastern part of the Lenin fields, should be mentioned the following ones: well No. 1348; 2,495 meters deep with an initial daily yield of 450 tons; and wells Nos. 1551 and 1555 with initial yields of some 400 tons each.

Several among new wells, which were successfully completed during 1938 in the Eastern part of the Lenin fields, gave good initial yields; thus, for instance, the wells Nos. 1476, 1477; 1464, 1508, 1533, 1543, 1588, 1593, etc. yielded from 140 to 180 tons per day and per well. The exploitation of the Lower Kirmakinsky horizon was intensively carried out during 1938 in the fields of The Leninneft, and especially in the Eastern part of the producing area. The highest production level was reached at Lenin Fields in June, when the average daily yields equalled 13,500 to 14,000 tons.

Exploitation drilling operations were continued in 1939 in the Eastern extension of the Lenin Fields, where a number of new flows were obtained, with initial yields varying between 80 and 130 tons of oil per day and per well (Wells Nos. 1596, 1623, 1629; 1636, etc.). Favourable results have been also achieved by the test drilling in the Southern flank of the Balakhany anticline: in this area, new oil saturated horizons belonging to the Upper Kirmakinsky Series were drilled by the well No. 1648. About one-half of the entire crude production of Lenin Fields was yielded during 1939 by the Lower Kirmakinsky Series.

Following the extension of the exploited area of Ramany in the South-Eastern direction (towards the Surakhany field), these two fields are now adjoining one another and the largest part of their production is being obtained from new exploited areas (South Eastern Ramany and North-Western Surakhany).

The total number of producing wells was of 3,025 in the Lenin fields of January 1st, 1941, as against 2,848 wells on January 1st, 1940, 164 new wells having been put on regular production, 105 old wells abandoned, and 118 temporarily suspended wells brought back into production in 1940.

Crude production continued to decrease in this area since 1940, what was due to the gradual exhaustion of these old fields, as well as to a very slow progress of exploitation drilling. Test drilling was carried out since the war mostly in the Eastern and South-Eastern extensions of the Ramany field, in direction of the Kala and Surakhany fields.

Contour drilling operations were continued, in order to determine the limits of oilbearing area of the Lower Kirmakinsky horizon in the Northern flank of the structure.

Following the general decline of crude production in the Baku region between 1941 and 1945, when the total production of the Asneft dropped from 22,878,200 tons in 1940 to only about 12,600,000 tons in 1945, the reconstruction of the Lenin fields was started with the end of the war. Considerable number of temporarily shut in wells were put again on production between 1946 and 1950, and the Leninneft reached the level of production planned for 1950, already late in 1949.

Efforts are being made now by the Soviets in order to increase the yields of this old field. Secondary methods of exploitation, such as, for example, flooding, are being applied with success in this area. Some of the oil fields of The Leninneft (No9, 6, etc.) have reached their production targets in advance of the programme, and The Leninneft as a whole has completed its production quota for the third quarter of 1950 as early as on 25th August.

Generally, the production situation somewhat improved here during 1950, whereas a number of shortcomings were reported from various areas of the Lenin Fields in 1949.

As regards the future development of these fields, the experience of the last fifteen years proved, that, after having yielded over 254,000,000 tons of cumulative crude production since the beginning of their exploitation, the Lenin Fields are being now gradually exhausted and their actual production level, which is of an order of 2,300,000 tons per year, is unlikely to be increased in the immediate future.

2. Surakhany field (The Orjonikidzeneft).

The Surakhany oil field is located at a distance of 15 kilometers to the South-East of the city of Baku. 50X1-HUM

Surface gas seepages were encountered at Surakhany since time immemorial, and gas-fire worship had taken place in a temple, the ruins of which still exist in this area.

First oil flows were obtained at Surakhany in 1907. The crude production developed in this field as follows: -

Crude Oil Production of the Surakhany Field.

<u>Year.</u>		<u>Metric Tons.</u>	<u>Year.</u>		<u>Metric Tons.</u>
1907	-	5,700	1925/26	-	1,091,700
1908	-	11,700	1926/27	-	2,004,300
1909	-	33,300	1927/28	-	2,702,800
1910	-	159,200	1928/29	-	3,318,600
1911	-	359,600	1929/30	-	3,543,900
1912	-	552,500	1930	-	868,600
1913	-	658,000	1931	-	4,161,600
1914	-	878,000	1932	-	3,753,900
1915	-	1,030,600	1933	-	4,074,900
1916	-	1,653,000	1934	-	4,118,900
1917	-	1,625,000	1935	-	3,790,700
1918	-	834,000	1936	-	3,039,400
1919	-	790,000	1937	-	3,354,000
1920	-	740,000	1938	-	2,980,000
1920/21	-	820,800	1939	-	2,841,000
1921/22	-	875,400	1940	-	3,402,500
1922/23	-	816,600	1950	-	2,600,000 *).
1923/24	-	929,900			
1924/25	-	896,500			

*). Our best estimates.

The Upper Productive Series within the exploited area were exhausted at Surakhany already by 1935, so that production is being obtained ever since from the Upper Kirmakinsky horizon which is also largely drilled, and mainly from Lower Kirmakinsky horizon. The Kirmakinsky horizon did not prove to be very prolific and the test wells drilled to this horizon did not give more than an initial daily production of about 200 tons per well. Wells drilled to the Lower Kirmakinsky horizon proved to be richer and their initial yields varied from 600 to 1950 tons per day.

Test drilling in the Eastern part of the Surakhany structure gave some favourable results in 1937. Several wells, which have been completed in this area, gave good initial yields; thus, for example, the well No. 736 gave an initial daily yield of 500 tons, while wells Nos. 756, 1029, 1042, 1045, 1094, and well No. 1090 (2480 meters deep) yielded an average initial production from 200 to 500 tons per well and per day.

Satisfactory results were also obtained from a number of wells located in the Southern and South-Eastern part of this field.

In this part of the Surakhany field the following wells gave initial daily yields varying from 300 to 400 tons per well: Nos. 1032, 1060, 1072, 1098 (daily yield - 400 tons) and No 1099.

Test drilling was mainly concentrated in the Eastern flank of the Surakhany structure during 1938, and the wellswere, generally, drilled to the Lower Kirmakinsky horizon. Among these, can be mentioned the wells Nos. 1075, 1073, and 1091. A number of wells, which have been completed in the Southern part of this field, reached depth of 3,100 and 3,243 meters (Wells Nos. 1101 and 1102, for instance). Negative results were obtained by the test drilling operations in the crestal part of the Surakhany structure, where a few wells (No. 1110, etc.) were waterlogged.

Several wells, which have been drilled in the Northern part of this field, in the territory adjacent to the Southern extension of the Lenin Fields, yielded strong oil flows from the Lower Kirmakinsky Series. Among these wells can be mentioned, for instance, the well No. 1108 drilled to a depth of 2,607 meters, which gave an initial daily yield of 400 tons and the well No. 1094 with an initial yield of 250 tons per day.

A new oilbearing area has also been discovered in the North-Eastern part of Surakhany, where several wells, which have been completed during 1939, yielded good initial production.

Following favourable results obtained by the exploitation drilling in the Southern part of the Surakhany field, which proved to be particularly prolific, the producing area of Surakhany was considerably extended in 1940, and The Orjenokidze-neft has overfulfilled its quota. Main crude production is being obtained herefrom the Lower Kirmakinsky horizon. In the Eastern part of the Surakhany structure favourable results were obtained in the vicinity of the well No 1092, which yielded an initial daily production of 100 tons. The average depth of exploited wells, completed to the lower Kirmakinsky Series at Surakhany in 1940 was of an order of 2,500 meters.

Test drilling was also continued to the Pontic Series (Lower Pliocene), which is striking under the main Productive Series of the Apsheron Peninsula. These deposits, generally, strike at a depth of about 3,500 meters. A number of wells drilled to these formations were, at that time (1940-1941) the

deepest wells ever drilled in the Soviet Union; one of these, the well No.1102, reached a depth of 3,472 meters. Notwithstanding the fact that, the test of Pontic Series was carried out for a number of years, no definite results were obtained at Surakhany from these deposits until after the war, when an intensive deep drilling was organized in this field.

Interrupted by the war, the development of the Surakhany field was resumed since 1946. Considerable number of wells, which had been earlier exploited by means of compressors, were put on deep pumping exploitation. Deep drilling was carried out in this field for the last three years. First wells exceeding a depth of 4,000 meters had been completed at Surakhany in 1948, and a number of others had been drilled since by means of special equipment (mostly constructed at Sverdlovsk oil machinery works) during 1949. Several pilot wells from 4000 and 5,000 meters deep were spudded in at Surakhany in 1950. A 5,000 meter well was under drilling in this field in October 1950. The Ural Heavy engineering works manufacture now special rigs capable of drilling to a depth of 5,000 meters; this equipment is undergoing trial in various fields of the Baku region.

On the whole, the Orjonikidzeneft was working satisfactorily during the last two years (1949-1950), and it has reached its production target for 1949 on the 28th October of the same year. Among the old fields of the Azneft, Surakhany seems to remain one of the most prolific at the present time. The total number of producing wells reached 1,356 on 1st January 1951.

3. Kara-Chukhur & Zykh fields (The Kaganovichneft)

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The Kara-Chukhur structure is situated on the extension of the tectonic line along which strikes the Surakhany anticline.

Deep test drilling was started at Kara-Chukhur in 1927. First oil flow has been obtained in 1928 in the well No.2 at a depth of 840 meters, with an initial yield of 600 tons per day. Between 1928 and 1931 twenty eight wells had been completed in this area and the new field has been brought into production in 1932.

Following horizons of the "Productive Series" (Middle Pliocene) proved to be oilbearing at Kara-Chukhur: II, III, IVa, IVb, IVc, IVd, IVe, V? VI, VII, VIII and IX. In addition, accumulations.....

of oil were also discovered later on in the Upper Kirmakinsky and Kirmakinsky horizons in this area. The most prolific among the above mentioned producing horizons were horizons V and VI, the latter yielding daily crude production of 400 to 500 tons per well, while horizon V gave daily from 150 to 350 tons per well.

The production situation developed at Kara-Chukhur as follows:-

Crude Oil Production of Kara-Chukhur & Zykha

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1928	- 34,300	1935	- 1,945,400
1929	- 21,900	1936	- 2,038,800
1930	- 82,200	1937	- 2,025,000
1931	- 266,200	1938	- 2,399,000
1932	- 352,200	1939	- 2,618,000
1933	- 1,227,300	1940	- 2,416,100
1934	- 1,861,400	1950	- 1,200,000 *).

The Zykha oil field is located in the immediate vicinity to the South of Kara-Chukhur.

Geological exploration work was started in this area in 1925, when first investigations for petroleum were organized by the Azneft at Kara-Chukhur. Test drilling which had been carried out at Zykha between 1930 and 1935 did not give any positive results. Thus, test wells Nos 2,3,4, which were spudded in in the Western part of the structure and reached horizon IV, failed to encounter any oil indications; wells Nos. 5,6,7, and 8 had reached horizon VII, but without discovering any oil occurrence.

Following these negative results, test wells Nos. 11, 12 and 13, 14 had been drilled to the lower section of "Productive Series" (Middle Pliocene), which is, generally well saturated with oil in the Apsheron Peninsula. Well No.12 gave in 1935 from a depth of 1710 meters an initial oil flow of about 1,000 tons per day. This completion led to the discovery of commercial accumulation of oil at Zykha, and this field has been put on regular production in 1937 by the Kaganovichneft. Since that time both oil fields are exploited together.

A number of exploitation wells, which has been completed at Zykha in 1937, gave good initial yields. Thus, for instance *). Our best estimates. 14.

wells Nos. 500 and yielded initial daily production of an order of between 200 and 300 tons per well. The drilling here reached in some cases an average depth of 2,300 - 2,500 meters. Favourable results obtained in this area during 1938 were due to many successful completions, and especially those achieved in the so-called "Great Kara-Chukhur" area, located in the North Eastern direction of the old field. Satisfactory results were also obtained by test drilling in the Eastern flank of the Kara Chukhur structure, where a number of wells were completed during 1938 and gave good initial yields, such as; the well No.502, which gave from a depth of 2,705 meters an initial daily production of 250 tons; well No.103- 2,645 meters deep - yielded 150 tons of oil per day; and well No.540, with an initial daily yield of 350 tons, from a depth of 2,513 meters, and, finally, the well No.553, which yielded from a depth of 2,297 meters 400 tons per day.

The Kirmakinsky and Lower Kirmakinsky horizons are being exploited at Kara-Chukhur and Zyk. The average depth of wells drilled to Lower Kirmakinsky Series reaches about 2,300 meters.

In result of several successful completions (Wells Nos.540, 547, 502, etc.), which have established the prolificacy of the Eastern flank of the Kara-Chukhur structure, a new oil bearing area could be prepared for exploitation. The well No.547, located in this area, has reached a depth of 2,748 meters and yielded an initial daily production of 200 tons. The well No.102, which has been completed in 1939 at Zyk, encountered the Lower Kirmakinsky Series, and gave an initial yield of 150 tons of oil per day. Turbine drilling was organized at Kara-Chukhur in 1939 to an average depth of 2,500 meters.

The average number of producing wells at Kara-Chukhur and Zyk was of 781 on 1st January 1941, as against 683 wells on 1st January 1940, 79 new wells having been brought in, 47 temporarily suspended wells brought back into production and 28 old wells abandoned during 1940.

As in other oil fields of the Azneft, considerable number of temporarily suspended wells had been put again on exploitation since the war. The average speed of drilling was, however much inferior at Kara-Chukhur to that of Buzovny in 1949, when it was of an order of 168 rounds a minute, or in some cases even only 92 rounds.

In summer 1950 automatic electric drills were reported to

be in use in the oil field of The Kaganovichneft. Since the substitution of the turbine drilling method to the rotary drilling, the speed of drilling increased three times. Electric drills are also now being used for test drilling operations in this area.

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4. Kala field (The Azizbekovneft).

Kala is the largest oil field of the Azneft at the present time. The Kala anticlinal structure is located at a distance of 32 kilometers in the North Eastern direction of Baku, and in 15 kilometers to the East of the Surakhany field

Frequent gas seepages were known in the Kala area since a long time. First test wells were spudded in 1904, when some oil shows were obtained from the Akchagyl stage of the Upper Pliocene Series in this area. The Azneft started exploration work at Kala in 1924. Between 1924 and 1929 eleven test wells were drilled here, but, in addition to strong gas indications, only insignificant oil showings were encountered.

Test drilling operations were continued, nevertheless, at Kala, and first flow, yielding from 500 to 600 tons of oil per day, was obtained in the well No.20 from horizon "D" of the "Surakhany Series" in November 1932. Well No.17 gave an initial oil flow of about 1,500 tons from horizon V of the "Productive Series". The Kala oil field has been put on regular production in 1933. The well No.98, drilled to a depth of 2,030 meters, yielded from Lower Kirmakinsky horizon an initial daily flowing production of 400 tons of oil.

Oil Occurrence.

Oil accumulations of the Kala field correspond to the following horizons of the "Productive Series" (Middle Pliocene): B,C, C-D, D, II, III, IV, IVa, IVb, IVc, IVd, IVe, V, Va, Vb, VI, VIa, VIb, Upper Kirmakinsky and Lower Kirmakinsky. Horizons V and VI proved to be the most prolific, and initial yields obtained from these in some cases reached up to 30,000 tons per well and per day, while initial daily production of wells drilled to Upper Kirmakinsky and Lower Kirmakinsky horizons varied from 500 to 800 tons per well.

The industrial exploitation of the Kala field developed as follows:-

Crude Oil Production of the Kala field.

Crude Oil Production of the Kala field.

<u>Year.</u>		<u>Metric Tons.</u>	<u>Year.</u>		<u>Metric Tons.</u>
1933	-	1,135,900	1938	-	4,343,000
1934	-	3,276,700	1939	-	4,112,000
1935	-	4,349,400	1940	-	3,895,200
1936	-	5,010,200	1950	-	3,600,000 *).
1937	-	4,182,000			

*). Our best estimates.

Practically all the horizons of the Upper Productive Series were actively exploited at Kala during 1936 and it was found possible to extend the productive area in a South-Western direction. Test and contour drilling to the Upper Kirmakinsky horizon was practically completed and some prolific wells were brought in. Thus, for instance, wells Nos. 440, 516 and 519 all gave initial yields of up to 400 tons per day. Test drilling was also continued to the Kirmakinsky and Lower Kirmakinsky horizons. The wells Nos. 428 and 501, both drilled to the Lower Kirmakinsky horizon, gave initial daily yields of about 500 tons each. The depth of the wells drilled to the Lower Kirmakinsky horizon reached from 2100 to 2400 meters.

A number of successful completions were reported from Kala during 1937. The wells Nos. 503, 637, 705, 715 etc., yielded from 300 to 500 tons per day and per well. With the completion of the exploration of the Lower Kirmakinsky horizon, the normal development of the Kala field, typical for the whole Baku region, seems to be finished. From now on, the further development of the oil field can be secured only by means of a certain extension of the oil area to the North-West and to the South-East, and also by the exploitation of horizons lying below the Productive Series. However, deep drilling to 3,500 and 4,000 meters would create many technical difficulties and would hinder the normal development of the exploitation of the Kala field.

Drilling to the Lower Kirmakinsky horizon was continued at Kala during 1938, when about one hundred new wells were spudded in to this horizon. Among a number of successful completions can be mentioned the wells Nos. 844, which has reached a depth of 2,330 meters, wells No. 917, etc., having given initial daily yields of over 300 tons of oil per well.

Exploration work was continued in new oilbearing areas, extending in the direction of Surakhany and Lenin Fields, as well as to the South-East of Kala. The average daily production of Kala, which had reached from 12,800 tons to 13,000 tons in 1938, did not exceed about 11,250 tons in 1939. A large number of suspended wells, frequent accidents during the drilling operations, and an extremely slow progress of exploitation drilling in new oil producing area of Kala, located in the North Eastern flank of this structure were the main reasons of the unsatisfactory producing situation. The bringing back into production of temporarily shut in wells was also much delayed at Kala and a number of wells were sandlogged in 1939. The production situation continued to remain unsatisfactory in this field during 1940-1941, when considerable number of producing wells were suspended, while test and exploitation drilling progressed but very slowly.

Some interesting results were obtained, however, in the area located to the South-East of the exploited oil field. Oil accumulations of industrial importance were discovered here in 1940 in Lower Kirmakinsky Horizon. First oil flows were obtained in this area early in 1940 in a few wells with an initial daily yield of 50 to 60 tons per well. Deep test drilling was continued in the South-Eastern extension of the Kala field at a distance of 2 kilometers of the original limits of the exploited area of 1933.

Another positive fact in the exploration work at Kala, was the obtainment late in 1940 of an oil flow in the well No. 1058, which was drilled to the so-called "Kala Series", with an initial daily yield of 200 tons. "Kala Series" strike under the Lower Kirmakinsky horizon (Middle Pliocene). These formations were also encountered in other oil areas situated to the East and to the West of the Kala field. At Surakhany, for instance, this series was crossed by wells Nos 1102 and 1107, which were drilled to Pontic Series (Lower Pliocene). The average thickness of "Kala Series" reaches in Kala field about 120 meters. A number of new exploitation wells were spudded in to this series late in 1940 and in 1941.

The total number of producing wells in the Kala field was 1,033 on January 1st 1941, as against 914 on January 1st 1940, 106 new wells having been completed, 85 wells brought back into production and 72 old wells abandoned during 1940.

The discovery of oil in industrial quantities in the "Kala Series" was of a general importance for the future exploitation of the Apsheron Peninsula oil fields, where with the gradual exhaustion of Kirmakinsky and Lower Kirmakinsky horizons the problem of proven reserves became of an actual interest.

Following this discovery, which led to a further development of the Kala field, since the end of the war, - the main producing oil field of the Azneft at the present time - the crude production could be maintained in this area at approximately the same level, and the possibility of the so-called "exodus from the Apsheron Peninsula", which was already theoretically examined in the Soviet press of 1939 and 1940, could be postponed for a number of years.

After the war, the development of the Kala field's exploitation was resumed by the Azizbekovneft trust, which has completed its 1949 production quota to the extent of 100.9 per cent. This field was one of the first among those of the Azneft to receive new drilling and pumping equipment of the latest Soviet design in 1948-1950, what has, naturally, contributed to the improvement of its production situation.

5. Artema Islandfield (The Artemneft).

The Artema Island (ex-Sviatoi) is lying in Caspian Sea to the East of Apsheron Peninsula, from which it was separated until 1940, when it has been linked with the continent by means of a pier, - by a straits between 4.5 and 2.3 kilometers wide. The Island is situated at a distance of 45 kilometers of the city of Baku.

Two anticlinal folds, the Northern and the Southern, are oilbearing in the Artema Island. The first one, striking in the North-Eastern part of the Island, forms the Southern half of a domal uplift, the Northern eroded half of which strikes under the sea. The Southern fold is complicated by a large overthrust fault. A considerable part of the Southern anticline also strikes under the sea.

Both these structures are being exploited now and, in addition, drilling in the sea had been carried out for the last fifteen years, what resulted in a considerable extension of the productive area in this field.

Drilling operations were started at Artema in 1897, to the Southern anticline, and five wells had been completed between 1898 and 1900, but no positive results were obtained. First commercial quantities of oil were discovered in the Northern anticline in 1902, whereas industrial accumulations of oil were encountered in the Southern structure only in 1931. Main crude production is being obtained now from the Lower Kirmakinsky deposits.

The production situation developed in the Artema Island as follows:-

Crude Oil Production of The Artemneft.

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1904 -	8,800	1923/24 -	80,400
1905 -	6,300	1924/25 -	110,700
1906 -	7,300	1925/26 -	130,500
1907 -	2,700	1926/27 -	129,300
1908 -	18,800	1927/28 -	131,100
1909 -	27,200	1928/29 -	127,300
1910 -	23,600	1929/30 -	187,100
1911 -	42,500	1930 -	66,400
1912 -	54,600	1931 -	419,100
1913 -	77,600	1932 -	665,800
1914 -	96,400	1933 -	604,700
1915 -	112,800	1934 -	645,800
1916 -	115,000	1935 -	575,000
1917 -	113,000	1936 -	708,000
1918 -	49,000	1937 -	787,000
1919 -	47,000	1938 -	804,300
1920 -	46,000	1939 -	867,200
1920/21 -	45,900	1940 -	943,900
1921/22 -	61,600	1950 -	1,000,000 *).
1922/23 -	78,700		

*). Our best estimates.

The total number of producing wells in the Artema field increased from 396 on January 1st 1940 to 470 on January 1st 1941, 62 new wells having been drilled, 26 temporarily shut in wells brought back and 14 old wells abandoned during 1940. The average number of exploited wells can be estimated at 600 for 1950.

The exploration of the Northern extension of the Artema structure, striking under the Sea, was started in 1936. However, deviated test drilling was proceeding very slowly.

Three wells, Nos. 150, 157 and 186 were brought in during 1936, and on the basis of the results obtained by these wells the initial yields of the wells drilled in the sea were higher than those of the wells drilled on the Island itself. All these wells were completed to the Lower Kirmakinsky horizon of the Middle Pliocene Series. No special discoveries were made in this field during 1937, but some favourable results were obtained in the oilbearing area located under the sea bottom in 1938, when a number of new wells (Nos. 521, 536, 1598, etc.) gave daily initial yields varying between 150 and 250 tons per well. Over forty test wells were drilled here to the Northern prolongation of the oilbearing structure, either by means of directional drilling, or in the sea, up to 1939. Before the war, these wells yielded about 98 per cent of the total crude production of the Artema field. The deviated drilling was continued in this area. The sea oil producing area was estimated then (1940) at about 560 hectares).

Directional drilling operations and drilling in the sea were carried out at Artema during 1940-1941; new wells completed in this field, generally, yielded good initial daily production of an order of a few hundred tons per well. Although, the further development of this area was much delayed by the slow progress of drilling in the sea, where special technical difficulties were encountered by the Soviet technicians. Directional drilling was also much delayed at Artema, though the largest part of crude production was obtained here from the wells completed in the sea, or on the sea shore, which have established an exceptionally rich oil saturation of the Northern flank of the Artema structure, striking under the Caspian Sea bottom.

In addition to a large oil producing area located in the sea (Northern flank of the structure), a new oilbearing area was discovered in the Southern flank of the Artema anticline, on the firm ground, in 1940. In spite of all the technical difficulties of deviated drilling and drilling in the sea, the production situation developed satisfactorily in the Artema oil field during 1940-1941.

The exploration of crude reserves lying under the sea bottom was intensified since the end of the war by the Azneft. With the modern drilling equipment of the Soviet design available, the average speed of deviated drilling and drilling in

the sea was doubled in the Artema Island in 1950.

Drilling in the sea progressed quite satisfactorily since 1948. Frequent cases of wells drilled at 5, 10, 20 and more kilometers off the coast are reported from this area. A new well has been completed in June 1950 in the No4 maritime sector of the Artemneft even at a distance of 100 kilometers from the coast.

A new trust, The Azmorneft (Azerbaijan Sea Oil) was created by the Soviets in 1950 for the exploitation of oil reserves under the Caspian Sea bottom. According to its Director, Professor Yakutin, hundreds of thousands tons of crude are now being obtained from the under sea oil accumulations, and this amount is likely to be increased many times in the near future. In order to intensify the exploration and the exploitation of the oilbearing areas located in the sea, The Azmorneft is building metallic islets all along the North-Eastern and Eastern coast of the Apsheron Peninsula. Directional test drilling is being carried out from these islets by means of the so-called "bush method", i.e., several test wells are being drilled in various directions, but from a single central point. Such a method of exploration proved to be very efficient in the sea areas of the Azmorneft.

6. Binagady and Sulu-Tepe fields (The Kirovneft).

The Binagady oil field is located in the vicinity of the village of Binagady, in 8 kilometers to the North of Baku.

Test drilling was started at Binagady in 1903 and industrial exploitation of this oil field was organized since 1908, but production by rudimentary methods began in this area already in 1889.

The industrial exploitation of this oilbearing area by the Kirovneft trust comprizes also the adjacent field of Sulu-Tepe and Chakhnagliar, which wre brought into production in 1938 and 1939 respectively.

The crude production progressed at Binagady as follows:-

Crude Production of The Kirovneft.

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1889-1900 -	20,200	1904 -	7,600
1901 -	11,900	1905 -	6,200
1902 -	11,700	1906 -	5,700
1903 -	6,900	1907 -	16,300

(Continued from page 22).

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1908 -	81,800	1925/26 -	342,700
1909 -	133,200	1926/27 -	328,200
1910 -	128,900	1927/28 -	334,900
1911 -	216,200	1928/29 -	333,000
1912 -	370,500	1929/30 -	364,600
1913 -	551,200	1930 -	102,500
1914 -	588,700	1931 -	393,800
1915 -	709,000	1932 -	421,200
1916 -	731,000	1933 -	451,300
1917 -	600,000	1934 -	411,500
1918 -	366,400	1935 -	430,000
1919 -	247,800	1936 -	336,000
1920 -	234,000	1937 -	398,000
1920/21 -	160,300	1938 -	419,000
1921/22 -	172,000	1939 -	654,000
1922/23 -	153,200	1940 -	896,000
1923/24 -	171,400	1950 -	550,000 *).
1924/25 -	226,400		

*). Our best estimates.

The above table shows that the decline of the old Bina-gady field began in 1917, and it continued until 1931, when the Sulu-Tepe field has been put on regular production by the Kirovneft. Ever since the gradual increase of the Kirovneft production was due to the development of the Sulu-Tepe, and later on, of Chakhnagliar oil producing areas, which are adjacent to the Binagady field.

The total number of producing wells in the fields of the Kirovneft increased from 346 on January 1st 1940 to 450 on January 1st 1941, 91 new wells having been completed during 1940, 32 old wells, which were formerly suspended, brought back into production, and 19 old wells abandoned.

At Binagady and Sulu-Tepe, as well in the most part of the other fields of the Apsheron Peninsula, the main crude production is being obtained from the Lower Kirmakinsky horizon of the Middle Pliocene Series, the Upper Kirmakinsky horizon being already almost completely exhausted, whereas the Upper Productive Series are eroded in this area.

Only the Lower Kirmakinsky horizon still contains appreciable reserves, but the yields of wells drilled to this horizon in the old producing area of Binagady are, generally, of an order of 10 tons per day and per well. The initial daily yields of the wells drilled at Sulu-Tepe and Kurdakhan (area adjoining Binagady) varied between 10 and 40 tons per well.

Until 1938 the prospects of Binagady and of adjacent ~~xxx~~ area of Sulu-Tepe were considered as being very poor. The situation changed, however, due to the obtainment of satisfactory results by the exploration work in the area located between the small exhausted field of Shubany and Binagady. The hypothesis, that the Lower Kirmakinsky horizon strikes from Lok-Batan to Binagady was confirmed by the discovery of commercial quantities of oil in the well No.631, which was drilled to the North-East of Lok-Batan, and - by a few successful completions - test well No.1204, for example, in the vicinity of the village of Balajary, to the South-West from Binagady.

The production situation much improved in the fields of The Kirovneft in 1939, when a new oilbearing area was discovered in the vicinity of the Binagady field. This area (Chakhnagliar), as well as two other small areas (Zigil-Peri and Griaznaya Gora) have been comprized into the Kirovneft organization and put on regular production in 1939.

A number of wells were also drilled to the Lower Kirmakinsky horizon in this area. Among these can be mentioned the well No.1344, which has reached this horizon at a depth of 1,222 meters in the Chakhnagliar area, and yielded an initial daily production of 450 tons. Several other wells drilled to the Lower Kirmakinsky horizon at Binagady gave initial yields of the same order (between 350 and 400 tons per well and per day), such as, for instance, wells Nos.1321, which gave an oil flow from a depth of 1490 meters, Nos.1446, 1342, 1402, 1403, 292, 255, 1320, etc..

The exploited area of the Kirovneft oil fields extends along about 15 kilometers, from Sulu-Tepe and Zigil-Peri, in the West, to Chakhnagliar, located to the East of Binagady, and Griaznaya Gora, situated in the immediate vicinity of Chakhanagliar.

The above discoveries coincided with the obtainment of a few oil flows in the Yassamal Valley area, lying to the South-West of Baladjary, immediately adjacent to the Binagady field. Thus, the hypothesis of an uninterrupted tectonic ~~in~~ line of oil bearing structures striking from Binagady southwards to Lok-Batam, westwards to Ker-Gez, Kizil-Tepe and Shongar, and, finally in the South-Western direction (Kara-Iag), seems to be justified by completions achieved at Binagady, Baladjary and Yassamal Valley.

Production developed satisfactorily in new oilbearing areas of the Kirovneft. A number of new wells, which have been drilled to these structures in 1940, proved to be very prolific. Thus, for example, the well No. 349, completed at Griaznaya Gora, gave an initial yield of an order of 1,000 tons per day.

Following the bringing into production of these new oilbearing areas (Chakhnagliar, Zigil-Peri and Griaznaya Gora) the development of the Kirovneft fields continued during 1940 and 1941. In addition to the above mentioned new areas, oil was also discovered in industrial quantities at Hodja-Hassan, where nine test wells drilled to the lower Kirmakinsky horizon gave favourable results. The Hodja-Hassan area was put on regular production by The Kirovneft early in 1941.

During the post-war reconstruction period (1946-1950) turbine drilling method was introduced on a wide scale into the oil fields of the Kirovneft, what resulted in the increase of average yields of wells, in some cases up to 50 per cent, in 1950. The average daily yields of wells, which were completed in the old Binagady field during 1950, such as wells Nos. 481 and 685; were small; i.e., they did not exceed five tons per well.

The Kirovneft has achieved its production quota for 1949 in November of the same year, and the producing situation was fairly satisfactory in these fields during 1950.

B. Western Group of Fields.

7. Bibi-Eibat fields. (The Stalinneft).

The Bibi-Eibat structure forms a brachy-anticlinal fold, striking from North-West to South-East; its Southern part being eroded and cut off by the sea. This structure is complicated by a number of overthrows. The Eastern flank of the Bibi-Eibat Bay is especially interrupted by faults in the crestal

crestal part of the structure. Apsheronian stage of the Upper Pliocene Series reaches here a general thickness of 513 meters, whereas the Akchagyl stage is only 38-40 meters thick. The so-called "Productive Series" (Middle Pliocene) attains at Bibi-Eibat a general thickness of over 1,500 meters (Horizons I to XVIII).

Oil Occurrence.

Small quantities of oil were encountered in Apsheronian and Akchagyl stages of the Upper Pliocene Series, but these are of no industrial importance. Exceptionally rich oil accumulations were discovered in some sixty oilbearing layers of the "Productive Series". Among these, layers: V, VII, VIII, IX, X, XI, XII, XV and XVII are the most prolific.

Exploration.

Industrial exploitation of Bibi-Eibat dates of 1882, whereas that of the Bibi-Eibat Bay (filled up at the present time) was started in 1923. The layer XVII, which corresponds to the Upper Kirmakinsky horizon of the Middle Pliocene Series in the other fields of the Apsheron Peninsula, is the main producing horizon of Bibi-Eibat. One of the first wells, which were completed to this horizon, in the Bay field, yielded an initial daily production of over 1,000 tons of oil.

If the Bibi-Eibat old field was being gradually exhausted the discovery of rich oil reserves in the Bay area contributed to maintain the dwindling yields of Bibi-Eibat. The development of the crude production at Bibi-Eibat since the beginning of its exploitation is given in the table below/ -

Crude Oil Production of the Bibi-Eibat Fields.

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1882	- 30,300	1892	- 517,700
1883	- 50,800	1893	- 782,500
1884	- 80,800	1894	- 536,100
1885	- 103,200	1895	- 721,800
1886	- 122,100	1896	- 1,150,000
1887	- 188,700	1897	- 1,334,600
1888	- 259,000	1898	- 1,582,800
1889	- 296,700	1899	- 1,328,800
1890	- 313,900	1900	- 1,805,200
1891	- 391,300	1901	- 2,191,900

(Continued from page 26).

<u>Year.</u>	<u>Metric Tons.</u>	<u>Year.</u>	<u>Metric Tons.</u>
1902	- 2,088,200	1922/23	- 588,500
1903	- 2,586,800	1923/24	- 650,300
1904	- 2,975,400	1924/25	- 938,500
1905	- 2,078,400	1925/26	- 1,299,200
1906	- 2,097,800	1926/27	- 1,439,100
1907	- 2,151,700	1927/28	- 1,451,600
1908	- 1,960,000	1928/29	- 1,684,300
1909	- 2,110,900	1929/30	- 2,445,900
1910	- 1,944,400	1930	- 886,600
1911	- 1,678,900	1931	- 3,602,800
1912	- 1,712,600	1932	- 3,072,300
1913	- 1,524,600	1933	- 3,725,400
1914	- 1,181,300	1934	- 3,684,700
1915	- 1,296,600	1935	- 3,413,100
1916	- 1,467,500	1936	- 3,526,200
1917	- 1,000,000	1937	- 3,860,000
1918	- 526,000	1938	- 3,738,000
1919	- 615,000	1939	- 3,849,800
1920	- 523,000	1940	- 3,988,400
1920/21	- 438,500	1950	- 3,100,000 *).
1921/22	- 496,300		

 *). Our best estimates.

As it can be seen from the above table, the crude production of the Bibi-Eibat field reached its summit in 1904, then it began to decline; the producing situation improved, however, with the bringing in of the Bibi-Eibat Bay field in 1923, and ever since the bulk of the crude produced at Bibi-Eibat was yielded by the Bay area.

The exploration of the horizon XVII was continued in the Bibi-Eibat old field. Test drilling to Kirmakinsky Series was also carried out. In the Bay field the exploration of Kirmakinsky series gave during 1937 favourable results. Horizon XVII continued to give satisfactory yields; thus, for instance, the well No.524 drilled to the horizon XVII, well No.528 and others yielded an average of 200 tons of oil per well and per day, and in some cases initial yields were even higher.

The producing possibilities of Bibi-Eibat improved during 1938, following the discovery of a new oilbearing area, the

so-called "Gora" (the mountain), located to the North-West of the Old field, and also due to determination of good oil saturation of Kirmakinsky and Lower Kirmakinsky horizons in this field.

Exploitation drilling to the Kirmakinsky and Lower Kirmakinsky horizons was carried out at Bibi-Eibat, while contour drilling to horizon XVII was completed in this field. The average depth of wells drilled to Kirmakinsky deposits exceeded 2,000 meters, and deep drilling encountered considerable difficulties in this area. Frequent drilling accidents were reported from Bibi-Eibat. Good oil saturation of the Lower Kirmakinsky horizon, especially in the Bay field, was confirmed by a number of new completions, including the well No. 1,300, which gave in September 1938 an initial yield of 500 tons per day. This discovery was of a general interest, as Lower Kirmakinsky horizon is **strongly** developed at Bibi-Eibat. Wells Nos. 1312, 1317, and 1325 have been put on regular production in 1939 with average daily yields of between 400 and 600 tons per well, while well No. 1303, located on the sea-shore, yielded a daily flow of 500 tons in July 1939. This well has drilled horizon III of the Lower Kirmakinsky Series, and has thus confirmed good oil saturation of the Lower Kirmakinsky deposits in the Bay field, including the extension of the oilbearing structure under the sea bottom.

Test drilling was continued at Volchyi Vorota and other new oilbearing areas of the Bibi-Eibat fields. Considerable number of exploitation wells were drilled to the Lower Kirmakinsky series in these areas. Test drilling was also organized in the sea area, at a distance of about 250 meters off the coast. Wells Nos. 2,618 and 2,627, completed late in 1939, gave initial yields of between 200 and 300 tons per day and per well.

Both Bibi-Eibat fields (Old and Bay) were operating satisfactorily in 1940, and the production quotas were overfulfilled in these fields. These favourable results were due to a good progress of exploitation drilling late in 1939 and during 1940, to the prolific Lower Kirmakinsky horizon. All the wells, which were drilled to this series, gave initial yields of an order of between 200 and 500 tons per day and per well.

Contour drilling was carried out in 1940 in new productive areas of "Gora" and "Volchyi Vorota", in the Northern and the North-Eastern parts of the Bibi-Eibat structure.

A number of successful completions were also reported in 1940 and 1941 from the Bibi-Eibat Bay field. Thus, for instance, the well No.1341 gave from a depth of 1824 an initial flowing production of 200 tons per day, while another well a daily oil flow of 300 tons from a depth of 1905 meters. Finally, test well No.1305, drilled in the sea, gave, from a depth of 2,240 meters an initial daily yield of 200 tons. The obtainment of this last flow led to the discovery of a new oilbearing area in the sea.

The number of producing wells was 1,702 on January 1st, 1941 in Bibi-Eibat, 148 new wells having been put on regular production, 121 temporarily suspended wells brought back, and 106 old wells abandoned during 1940.

The development of the new oil producing areas was resumed at Bibi-Eibat since the end of the war. Considerable number of temporarily shut in wells had been brought back into production. Thus, for instance, 298 of such wells were put again in operation during 1949, while 47 idle wells were brought back in the oil field No.4 alone, which yielded a surplus crude production of 8,000 tons.

Three of the Stalinneft fields had reached already in July 1949 the daily production level planned for 1950, and The Stalinneft union as a whole was ahead of the production schedule. The oil field No.6 of the Stalinneft gave several thousand tons of additional crude production in 1950, as well as the field No.7, which overfulfilled the plan quota for 1950.

Daily crude production increased at Bibi-Eibat by several hundred tons in 1950, and the number of producing wells increased by about 50 since the beginning of the same year. The annual production quota for 1949 has been achieved by the end of October 1949. At Bibi-Eibat, the fields Nos 4 and 6 worked especially satisfactorily in 1950, whereas the costs were reduced by 7.3 per cent in the oil field No.2. The total crude production of The Stalinneft can be estimated at an order of 3,100,000 tons in 1950. Bibi-Eibat seems to be now second only to Kala among the oil fields of the Baku region.

8. Lok-Batan & Puta fields (The Molotovneft).

Lok-Batan field is situated at a distance of 10 kilometers of Baku, in the vicinity of the railway station Puta. The Lok-Batan anticlinal uplift is separated from Puta anticline

By a shallow ravine; both these oil fields are exploited by the Molotovneft trust.

Oil Occurrence.

Crude production is being obtained in this area from "Productive Series" (Middle Pliocene). Several oil producing horizons (I, II, III, IV, VI, VIIa, VIIb, IX, X, and XI) are exploited at Lok-Batan.

The Puta oil field is located in the vicinity of the railway station Puta, in 16 kilometers to the South-West of the city of Baku. Puta field has been put on regular production in 1933 whereas Lok-Batan area has been brought in in 1932. Lok-Batan proved to be one of the most prolific fields of the Apsheron Peninsula. Among the first completions were following wells: No. 62, which gave an initial production of 1,000 tons per day; well No. 45, with an initial daily yield of 15,000 to 20,000 tons of oil; well No. 18, which gave an initial flowing production of 10,000 tons per day, from a depth of 515 meters; and well No. 16, with an initial daily yield of between 2,000 and 5,000 tons.

In addition to the horizons I, II, III, IV, VI and VII, industrial exploitation of the Upper Kirmakinsky horizon was started in 1933 at Puta. Wells completed to horizons VIII and IX gave initial yields varying from 170 to 600 tons per well and per day (Wells Nos. 109, 122 and 82).

At Lok-Batan, horizons II and ^{III}, which gave very high initial yields at the beginning of industrial exploitation, were waterlogged in 1934, and their output considerably decreased. Horizon IV was the main producer during 1934, and gave high initial yields. Horizon V gave initial flows up to 10,000 tons per well. The exploitation of horizon VI began in 1935, while test of horizons VII and VIII was carried out. The horizon VI proved to contain a large gas cap in the crestal part of the structure, and the initial yields of wells drilled to this horizon outside the area of the gas cap and to horizon VII were very moderate, and on the average did not exceed 100 tons per day.

Wells drilled to horizon VIII gave average initial yields between 100 to 200 tons per day, which was also very moderate in comparison with enormous yields, which were previously obtained from horizon IV. The first wells completed to Kirmakinsky and Lower Kirmakinsky horizons also gave very modest results.

Production continued to develop satisfactorily at Puta, where the bulk of yields was obtained from horizons VII and VIIb

of the Middle Productive Series. The productive area of Lok-Batan was extended in a Western direction towards the Puta fields in 1936. Horizons VI, VIA, VIIa and VIII were mainly exploited, while test drilling was continued to horizons IX and X. The wells drilled to these horizons gave only moderate initial yields, varying from 50 to 100 tons per day.

At Puta main production was obtained from horizon VIII, which corresponds to the Upper Kirmakinsky horizon of the Eastern fields. Some of the wells completed to this horizon gave good results, as, for example, well No.213 (initial yield of 200 tons per day). New exploitation wells drilled to horizons VII and VIIa yielded up to 150 tons per well. Test drilling was continued to deeper striking horizons, and in addition to the horizon IX, which was drilled through earlier, two new horizons, X and XI, have been reached by the drill. Test drilling was also carried to the West of the Puta field, in direction of Lok-Batan.

Exploration of horizons VIII, IX and X was continued during 1937, when favourable results were obtained in the Western section of the Lok-Batan area, from horizon VIII; thus, for instance, well No.521 yielded 500 tons of oil per day. An intensive exploitation of the horizon VIII was carried out at Puta, where well No.190 yielded from this horizon an initial production of 250 tons per day.

The exploitation of horizons VIII, IX and X was continued in 1938, while test drilling to lower horizons was undertaken. Some favourable results were obtained at Lok-Batan; test well No.631, located far outside the limits of the exploited area, has drilled the Lower Kirmakinsky horizon, and yielded an initial production of 300 tons per day. Test drilling was continued in the area lying to the North-East of the exploited area of Lok-Batan. Some successful completions were also achieved to the South of Lok-Batan, where well No.436 gave a flowing production of about 150 tons of oil per day.

Test drilling operations were continued during 1939 in the Yassamal Valley area located in the Southern prologation of the Lok-Batan field. Test well No.296, which has been spudded in here, at a distance of about 6 kilometers to the South of the old exploited area of Lok-Batan, in the vicinity of the Hodja-Hassan lake, gave an initial flow of 50 tons from the Lower Kirmakinsky horizon.

The production of The Molotovneft showed a decline during 1940, when this trust failed to fulfill the plan quota, despite the fact, that the producing situation somewhat improved by the end of the year. Such an unsatisfactory state of affairs was due to a very slow preparation for exploitation of new oilbearing areas, and to the delays in bringing into production of Yassamal Valley, the development of which could improve the general situation. A number of oil flows were obtained here during 1940 and early in 1941; new wells, generally, gave initial yields varying between 100 and 250 tons daily (wells No. 315, 699, etc.). Exploration drilling was continued in the old exploited areas of Lok-Batan and Futa, in order to test the sands of Kirmakinsky and lower Kirmakinsky horizons. A new small oilbearing area has been discovered at Futa in the vicinity of Kushhana.

The crude production developed in the fields of The Molotovneft as follows:

Crude Oil Production in the fields of The Molotovneft.

<u>Year.</u>		<u>Metric Tons.</u>	<u>Year.</u>		<u>Metric Tons.</u>
1920/21	-	21,100	1931	-	226,200
1921/22	-	30,000	1932	-	218,900
1922/23	-	40,500	1933	-	871,800
1923/24	-	43,000	1934	-	1,473,700
1924/25	-	51,800	1935	-	1,561,600
1925/26	-	66,600	1936	-	2,354,300
1926/27	-	73,700	1937	-	2,256,000
1927/28	-	103,000	1938	-	2,462,000
1928/29	-	86,100	1939	-	2,415,000
1929/30	-	148,400	1940	-	2,398,700
			1950	-	1,300,000 *).

*). Our best estimates.

The total number of producing wells was in the fields of The Molotovneft 959 on January 1st 1941, 102 new wells having been completed, 74 old wells formerly shut in brought back into production and 99 old wells abandoned.

No important discoveries were reported from Lok-Batan since the end of the war. Exploitation drilling was resumed in Yassamal Valley and other oilbearing areas of the Molotovneft. A number of new wells have been put on regular production at Lok-Batan and Futa fields, but their average daily yields were

of an order of 50 tons per day and per well.

Gradually, production by means of deep pumping is being substituted to that by the compressor method. Thus, 19 wells were put on exploitation by means of deep pumps in the No2 field of the Molotovneft in 1950. Underground repair work is being carried out in some of the Lok-Batan wells by means of automatic machines.

On the whole, the production quotas were not quite achieved by the Molotovneft in Spring 1950, and this in spite of the efforts to intensify the exploitation of old wells by introducing the deep air pressure system, which replaces the compressor method in a number of exploited wells in these fields.

The average annual crude production decreased to a considerable extent during the last ten years; this decline was due to the gradual exhaustion of the old wells at Lok-Batan and Puta, and to the failure to discover any new prolific oil areas. At the present time, the Molotovneft yields a total production of an order of 1,300,000 tons per year. As far as it can be foreseen, unless some new important discoveries, the production situation of these fields seems to be more or less stabilized for the coming few years.

9. Ker-Gez and Kizil-Tepe fields (The Kergezneft) - 50X1-HUM

The Ker-Gez field is located at a distance of six kilometers in the Western direction of the railway station Puta. The Kizil-Tepe and Shongar areas are situated farther to the West, on the same tectonic line with Ker-Gez

All these small oil fields are exploited by The Kergezneft organization.

Oil indications were encountered at Ker-Gez in the lower section of the "Productive Series" at a depth of 820 to 840 meters.

Exploration work was started in this area in 1927. Test drilling, which was carried out at Kizil Tepe in 1933, resulted in the discovery of industrial quantities of oil in "Productive Series" (Middle Pliocene). The average yields obtained from the first wells, which were completed in this area, varied between 10 and 15 tons per day and per well. At Shongar, well No.10, which was drilled to the Eastern flank of the anticline, yielded first oil in commercial quantities, and the well No.15, completed along the same flank, gave an initial yield of 500 tons per day.

Exploitation drilling was started at Ker-Gez in 1932, and a small production was obtained here since 1933, when the exploitation of the Ker-Gez oil area was organized by The Molotovneft. This production developed as follows: -

<u>Crude Production of The Kergezneft.</u>					
<u>Year.</u>		<u>Metric Tons.</u>		<u>Year.</u>	<u>Metric Tons.</u>
1933	-	32,400		1938	- 231,000
1934	-	55,800		1939	- 239,800
1935	-	43,000		1940	- 354,000
1936	-	36,600		1950	- 400,000 *).
1937	-	148,000			

*) . Our best estimates.

The new Kergezneft trust, comprizing the fields of Ker-gez proper, Kizil-Tepe and Shongar was organized in 1937. The development of the Kergezneft was proceeding very slowly, due to frequent drilling accidents and lack of technical equipment in the new fields. Test drilling was carried out to horizons lying below the horizon VIII, but it did not give any definite results. The main production was yielded by horizons IV and V in 1938, when the producing situation improved at Ker-Gez. The situation was far from being satisfactory in the fields of The Kergezneft during 1939. An extreme slowness of the exploitation drilling operations, frequent drilling accidents, and a large number of non-working wells were mainly responsible for the non-fulfillment of the programme quota by this trust.

Favourable achievements were reported, however, from Kara Dag, located at a distance of a few kilometers to the South West of the Ker-Gez field.

The production situation much improved in the fields of The Kergezneft during 1940, following the bringing into production of the new oilbearing area of Kara-Dag. Several wells were put on regular exploitation at Kara-Lag in 1940. The development of this new field was much delayed due to the inexistence of storage reservoirs and pipe-line. Wells Nos. 10 and 11 yielded large quantities of gas.

Exploration work was carried out in the Shongar area, adjacent to the Kizil-Tepe field; oil was obtained in this area from horizon V of the "Productive Series" (wells Nos. 164, 170, etc.

After the war the modernization of The Kergezneft technical equipment was undertaken, and the development of its crude production was resumed. At the present time, The Kergesneft is working satisfactorily, as it appears from the fact, that this trust has fulfilled its production plan quota for 1949 already early in November of the same year. The average annual production of these fields can be estimated now at about 400,000 tons.

C. Northern Fields.

10. Buzovny and Mashtagi. (The Buzovnyneft).

This new oil producing trust exploits the adjacent fields of Buzovny and Mashtagi, both located in the North-Eastern part of the Apsheron Peninsula, near the Caspian Sea coast. Since the bringing into production of the Buzovny and Mashtagi oilbearing areas in 1946, The Buzovnyneft developed into one of the most promising oil trusts of the Azneft, and its actual crude production can be roughly estimated at about 1,200,000 tons.

In 1950, four separate oil fields (Nos.1,2,3,and 4) were exploited by The Buzovnyneft. Following the obtainment of first prolific oil flows at Buzovny, an intensive exploitation drilling was undertaken in this area. Thus, for instance, over 280 producing wells were exploited here in 1948, whereas about 20 new wells were completed at Buzovny during 1947.

The average speed of exploitation drilling increased at Buzovny during the last five years as follows:-

<u>Year.</u>	<u>Average speed of drilling</u> <u>per rig and per month.</u> <u>(In Meters).</u>
1946 -	816
1947 -	1,064
1948 -	1,592
1949 -	1,844
1950 (January-June)	1,939
1950 - (July)	2,573

In separate cases the speed of exploitation drilling exceeded to considerable extent the above average levels. Such was, for instance the case of the well No.526, which has been completed at a speed of 4,528 meters per rig and per month, whereas another well was brought in at a rate of 4,117 meters per rig and per month late in 1949. If the exploitation drilling was going on at a rate of 228 rounds of rotary drill per minute in 1946, its speed reached up to 518 rotary rounds per minute in 1950 at Buzovny.

At the present time The Buzovnyneft carries out its drilling at a record average speed for U.S.S.R. Among the oil producing trusts of The Azneft the Buzovnyneft was the first to complete its programme quota for the first six months of 1950, whereas the oil field No.1 of The Buzovnyneft has completed its nine months production target on the 15th August 1950. Over one hundred new wells have been put on regular production at Buzovny in 1950, and more than 35 temporarily suspended wells have been brought back.

The crude oil production increased in the No.1 field by about 25 per cent in 1950, as compared with 1949. The amount of meterage drilled at Buzovny was two and a half times superior in 1950, as against 1949. A considerable number of new wells have been put on regular production in the oil field No. 4 of the Buzovnyneft during 1949, and crude production increased in this field by sixteen times.

Since 1946 the exploitation methods underwent considerable modifications at Buzovny. New powerful engines, swivels, mud pumps, and drill-bits were supplied to this field, which now applies accelerated methods of drilling. Large number of wells which had been formerly exploited by means of compressors, ~~was~~ were put on deep pumping exploitation.

Following the completion late in 1949 of the circular electric railway line, Buzovny, Mardakiany, Surakhany, Kala and Sabunchi are directly linked now with the city of Baku, what would, naturally, contribute to the development of The Buzovnyneft new fields.

The Buzovnyneft was one of the first trusts of the Baku region to overfulfill the programme quotas for 1949 and 1950. If the plan drilling speed was set for 1950 at 2,200 meters per rig and per month, the actual drilling rate reached in one of the fields of The Buzovnyneft 3,000 meters, while in some areas it equalled 4,342 meters.

Within five years of its existence (1946-1950) The Buzovnyneft developed in a model oil area equipped with modern installations, compressor stations, hundreds of derricks, pipelines, accommodations for personnel, etc.. Crude is being directly pumped from producing wells to the storage reservoirs at Buzovny.

Oil is being obtained in this area from Upper Kirmakinsky and Kirmakinsky horizons of the Middle Eocene Series, which are the best oil collectors in the major oilfields of the

Apsheron Peninsula.

In view of a rapid development of crude production in the fields of The Buzovnyeft since 1946, a new substantial increase of their yields can be expected during the next few years, due to the intensification of deep drilling operations and continuous growth of the average speed of the exploitation drilling in these fields.

D. Fields Located Outside The Apsheron Peninsula.

11. Pirsagat and Nefte-Chala (The Aliatneft).

The Aliatneft trust is exploiting two small oil fields situated in the Aliaty district, to the South of the Apsheron Peninsula, namely: a. Pirsagat and b. Nefte-Chala.

a. Pirsagat is located at a distance of 5 kilometers of the sea-coast, to the South of the railway station Aliaty of Transcaucasian railway.

Deep test drilling was started at Pirsagat in 1932. Twenty four wells were drilled here between 1932 and 1936. Wells Nos. 2, 1, 4, 7 and 11 encountered commercial accumulations of oil in "Productive Series". The well No. 7 gave a powerful gas gusher from a depth of 3,118 meters; well No. 9 yielded from a depth of 840-860 meters a small oil production. A number of wells (Nos 27, 48, 54, 29 and 33) were brought into production during 1936. Their initial daily yields varied between 100 and 350 tons per well and per day. The Pirsagat field has been brought in in 1937. The exploited area of Pirsagat was enlarged in 1938, but the original hopes as to the importance of this new oil field were not justified. Deep drilling was continued in this area during 1939 and 1940, but no new discoveries of any importance were made at Pirsagat.

The crude production of the Aliatneft (Pirsagat and Nefte Chala fields) is shown in the table below:

Crude Oil Production of the Aliatneft.

<u>Year.</u>		<u>Metric Tons.</u>	<u>Year.</u>		<u>Metric Tons.</u>
1931	-	21,300	1937	-	126,000
1932	-	28,800	1938	-	154,000
1933	-	24,700	1939	-	157,200
1934	-	29,200	1940	-	185,000
1935	-	35,000	1950	-	250,000 *).
1936	-	41,100			

*). Our best estimates.

b. Nefte-Chala.

Nefte-Chala is situated in 4 kilometers to the East of the Caspian Sea shore and in 12 kilometers to the South of the Kura river estuary [redacted]
[redacted]

Test drilling was started at Nefte-Chala in 1926 and this area was brought into production in 1931, despite the fact that its exploration was not yet achieved. Separate wells, which had been drilled to horizon V of the "Productive Series", gave oil flows. Thus, for example, the well No.19 yielded an initial flowing production of 120 tons of oil per day. The crude production developed here with an extreme slowness, what was due to the limited resources of Nefte-Chala, and, generally, small yields at Hirsagat, a number of prolific wells, which yielded high initial flowing production in 1936 and 1937 seem to have been rather an exception than a rule. The Nefte-Chala field did not achieve its production quota for 1940. The production situation somewhat improved in this area since 1946, when a number of new oilbearing horizons had been discovered and put on regular exploitation. The actual crude production of the Aliatneft can be estimated at about 250,000 tons per annum.

12. The Kirovabadneft.

The exploitation of the Kazan-Buly oil field, which has been brought into production in 1947, met with difficulties usual under the Soviet conditions: lack of technical equipment, the inexistence of storage reservoirs, the inefficiency of local management, etc. This small field is situated in the Kirovabad province of Azerbaijan (ex Ganja), and is thus isolated from the main petroleum industrial centres. In spite of all the initial difficulties and delays, the production situation was fairly satisfactory at Kazan-Buly during the last two years, and The Kirovabadneft trust has even reached its plan targets for 1949. It is too early, however, in order to be able to judge, how far were justified the original hopes in connection with the obtainment of oil in industrial quantities at Kazan-Buly. The actual crude production of The Kirovabadneft could be estimated at an order of 100,000 tons per year.

III. THE CRUDE RESERVES OF THE EXPLOITED FIELDS OF THE BAKU REGION.

The reserve situation in the exploited fields of the Azneft, as of January 1, 1941, was estimated as follows:-

Azneft.

<u>Area.</u>	<u>Proven.</u>	<u>Semi-Proven.</u>	<u>Probable.</u>	<u>Possible.</u>	<u>Total.</u>
<u>A. Areas within Apsheron Peninsula.</u>					
<u>a/. Eastern Apsheron.</u>					
1. Lenin Fields	- 8,050,000	16,100,000	10,200,000	19,000,000	53,350,000
2. Surakhany	- 6,700,000	14,100,000	3,900,000	5,800,000	30,500,000
3. Kara-Chukhur & Zykh	- 8,450,000	12,100,000	9,400,000	19,300,000	49,250,000
Kala	-16,500,000	19,200,000	13,000,000	10,000,000	58,700,000
5. Artema Island	- 4,350,000	9,800,000	5,300,000	5,000,000	24,450,000
5. Binagady, Sulu-Tepe, etc.	- 4,100,000	6,200,000	6,750,000	21,400,000	38,450,000
<u>Total Eastern Apsheron:</u>	- 48,150,000	77,500,000	48,550,000	80,500,000	254,700,000
<u>b/. Western Apsheron.</u>					
1. Bibi-Eibat	- 10,700,000	16,300,000	9,200,000	19,500,000	55,700,000
2. Lok-Batan & Puta	- 6,800,000	16,100,000	20,400,000	20,000,000	63,300,000
3. Ker-Gez, Kizil Tepe, Shongar & Kara-Dag	- 1,230,000	6,650,000	12,200,000	48,500,000	68,580,000
<u>Total Western Apsheron</u>	- 18,730,000	39,050,000	41,800,000	88,000,000	187,580,000
<u>Total Apsheron:</u>	66,880,000	116,550,000	190,350,000	168,500,000	442,280,000
<u>B. Areas outside Apsheron Peninsula.</u>					
1. Pirsagat	- 430,000	1,350,000	2,500,000	7,500,000	11,780,000
2. Nefte-Chala	- 280,000	590,000	400,000	950,000	2,220,000
<u>Total outside Apsheron:</u>	- 710,000	1,940,000	2,900,000	8,450,000	14,000,000
<u>Grand Total Exploited fields of The Azneft:</u>	- 67,590,000	118,490,000	93,250,000	176,950,000	456,280,000

In order to obtain an up to date picture of the reserve situation in the exploited fields of the Baku region, the total crude production of The Azneft between 1941 and 1950 (in round figures about 145,000,000 tons) should be subtracted from the above grand total, while the estimated reserves of the new oil fields of The Azneft, those of The Buzovnyneft and Kirobadneft, should be added to this total.

IV. THE SPECIFICATIONS OF CRUDES OF THE BAKU REGION.

In view of the fact, that the specifications of crude oils produced in the old fields of the Apsheron Peninsula are generally known, only those of new fields, which had been put on regular exploitation by the Soviets, are given below.

1. Kara-Chukhur crude (Upper Kirmakinsky horizon).

Specific gravity at 20°C	-	0.861
Flash point (Abel-Pensky) °C	-	0
Paraffin content (Golde) in %	-	2.16
Coagulating point	below	- 20°C
Sulphur content	-	0.175%
Resins content	-	9.6 %
Coke content (Conradson)	-	0.53%
Acid content in % SO ₂	-	0.015

2. Kara-Chukhur crude (Lower Kirmakinsky horizon).

Specific gravity at 20°C	-	0.866
Paraffin content (Golde)	-	0.35 %
Coagulating point	below	- 20°C
Sulphur content	-	0.222 %
Resins content	-	18.2 %
Coke content (Conradson)	-	1.74 %
Acid content in % SO ₂	-	0.031

3. Zykh Crude (Horizon VIII).

Specific gravity at 20°C	-	0.828
Paraffin content (Golde)	-	7.5 %
Coagulating point from	+ 15 to + 17 °C	
Sulphur content	-	0.077 %
Resins content	-	6.0 %
Acid content in % SO ₂	-	0.003

4. Kala crude (average test).

Specific gravity at 20°C	- 0.873
Flash point (Abel-Pensky)	- 27°C
Paraffin content (Golde)	- 1.38 %
Coagulating point	below - 20°C
Sulphur content	- 0.23%
Resins content	- 15.0%
Coke content (Conradson)	- 1.67 %
Acid content in SO ₂	- 0.018 %

5. Sulu-Tepe crude.

Specific gravity at 20°C	- 0.904
Engler viscosity at 50°C	- 1.76
Paraffin content (Golde)	- 0.43 %
Sulphur content	- 0.35%
Coagulating point	below - 20°C
Resins content	- 25.4 %
Coke content (Conradson)	- 2.76 %
Acid content in % SO ₂	- 0.17%

6. Lok-Batan heavy crude (average test).

Specific gravity at 20°C	- 0.901
Flash point (Abel-Pensky)	- 26°C
Paraffin content (Golde)	- 0.98%
Coagulating point	below - 20°C
Sulphur content	- 0.218 %
Resins content	- 27 %
Coke content (Conradson)	- 2.6 %
Acid content in % SO ₂	- 0.14 %

7. Ker-Gez crude.

Specific gravity at 20°C	- 0.922
Paraffin content (Golde)	- 0.37 %
Sulphur content	- 0.319 %
Resins content	- 51 %
Coke content (Conradson)	- 4.0 %
Acid content in SO ₂ %	- 0.124 %

8. Pirsagat crude.

Specific gravity at 20°C	- 0.853
Flash point (Abel-Pensky)	- 0
Coagulating point	from -2 to -4°C
Paraffin content (Golde)	5%
Sulphur content	- 0.157 %
Resins content	- 27.4 %
Coke content (Conradson)	- 3.01 %
Acid content in % SO ₂	- 0.008 %

V. GENERAL SUMMARY AND CONCLUSIONS.

Summing up the actual production situation in the fields of The Azneft, the continuous decline of their relative importance, in comparison with the total Soviet crude oil production should be emphasized. Indeed, if the Azneft production equalled 70.43 per cent of the total crude production of the U.S.S.R. in 1940, it did not exceed about 43 per cent in 1950. This phenomenon is not due to any temporary unfavourable conditions prevailing in the Baku fields, but can be explained only by the gradual exhaustion of a number of old oil fields of the Azneft, on one hand, and - by the rapid development of new oil regions in the Eastern part of the Soviet Union, on the other.

The tendency of the Soviets to displace the main centre of the petroleum industry from Caucasus to the Eastern regions is not new, it was obvious already before the second world war, when the idea of the so-called "Second Baku" was sponsored by the Soviet government. But the present international situation and the extreme vulnerability of the Baku region in the case of a new world war make the Soviets to limit the research for petroleum in the Baku region, hence a slow progress of the exploration work in various areas of the Baku region.

At the present time, the exploitation of the available crude reserves of The Azneft is being intensified by means of modern methods and equipment, such as: Turbine drilling to great depths, deep pumping, secondary production methods, new automatic machinery for underground repairs, etc.

The development of drilling in the sea by The Azmorneft trust, which was specially created for this purpose, has to be also pointed out. The exploitation of the under sea reserves in the vicinity of Artema Island and Bibi-Eibat field was progressing satisfactorily during the post war period.

No important discoveries were made within the limits of the Apsheron Peninsula since 1946, when the prolific fields of the Buzovnyneft were brought in.

The relatively slow increase of production in the Azneft fields (by about 6% in 1949) for instance, in comparison with the Eastern oil regions, where, in some cases, it reached 26 and even 32 per cent per year, proves, once more, the gradual exhaustion of the Baku oil area.

As regards the immediate future, unless some new important discoveries, there are no reasons to expect a considerable increase of The Azneft crude production for the coming few years.

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